

## FIELD TRIPS OF THE CLUB

A group of twenty-four made the trip to Franklin Lake on Sunday, October 16. The surrounding hills here are of the basalt rock formation, a northern extension of the Watchung Mountains and are characterized by an exceedingly rich and varied flora. An interesting occurrence here is the walking fern growing on the loose trap rock talus, where it seems to be thriving exceedingly well away from its usual limestone base.

The group of Persimmon trees growing along the edge of the swamp at the Clove were found to be abundantly in fruit. Several members sampled the fruit and found the outer skin rather bitter. The fruit improve with age and are at their best in mid-winter when their bitterness has disappeared. Plants noted along the trail were Blue Cohosh with its bright blue berries flimsily supported on the dried and yellow plant stalks, Gold Thread, and One-sided Pyrola, its persistent and dried up flower stalk still proclaiming its identity.

Prickly Pear Cactus is found growing on the exposed trap rock ledges in quite a few places. More rarely *Selaginella rupestris* is found in similar places. The other little member of the tribe, *S. apus*, was found along the trail beside a spring on High Mountain. Here also in open wet meadow spaces were the beautiful Fringed Gentians in full bloom. Intermingled were Bottle Gentians which had bloomed somewhat earlier.

W. LINCOLN HIGHTON

## FIELD TRIP OF SATURDAY, OCTOBER 22

A perfect autumn afternoon brought out thirty-five people for the field trip on the western slope of the Palisades near Coytesville, New Jersey. Asters and goldenrods were the primary objectives in this area of beech, oak, and tulip tree woods. The following species were noted: *Aster cordifolius*, *A. divaricatus*, *A. ericoides*, *A. lateriflorus*, *A. macrophyllus*, *A. novae-angliae*, *A. paniculatus*, *A. puniceus*, *Solidago altissima*, *S. caesia*, *S. graminifolia*, *S. juncea*, *S. nemoralis*, *S. rugosa*, *S. speciosa*, and *S. ulmifolia*.

H. K. SVENSON

## PROCEEDINGS OF THE CLUB

MEETING OF OCTOBER 4, 1932

The meeting at the American Museum of Natural History was presided over by Dr. M. A. Howe. There were 45 members present.

The following were unanimously elected to membership in the club: Dr. George S. Avery, Connecticut College, New London, Conn.; Miss Florence L. Barrows, Apt. 43, 47 Claremont Avenue, New York; Miss Rose T. Bleimeyer, 11420-124th Street, South Ozone Park, N. Y.; Mrs. S. H. Chubb, 6065 Broadway, New York; Mr. L. H. Grunebaum, 37 Wall Street, New York; Mr. Spencer Scott Marsh, Midwood Terrace, Madison, N. J.; Mr. William A. Rauchuck, Box 12, Hamilton Grange New York; Mr. James F. Willey, C. G. 102, Base 2, Clifton, Staten Island, N. Y.

The resignation of Mr. Max A. Elwert was accepted with regret.

It was announced with regret that Mr. W. W. Ashe had passed away.

Dr. Fred W. Foxworthy, who has recently become a life member of the club, reported on some of his experiences in the Federated Malay States where he has been for several years in charge of Forestry Research. He has just published a monograph on the Malayan Dipterocarpaceae. He spoke of the very uniform climate and the remarkable growth of the forest there.

Dr. Ralph R. Stewart told of his botanical collecting in the Himalayan Mountains and stated that a number of plants from this region have proven hardy and adaptable in our climate.

Dr. R. A. Harper spoke briefly on his cytological work and on his bog plantings at his home.

Dr. A. H. Graves told of his success in crossing the American chestnut with disease resistant old-world species and stated that he had a large number of seedlings from these growing in his plantations at Mr. Carmel, Connecticut, one of which made phenomenal height growth in the past year, equal to three years' normal growth. He also stated that on his summer absence of three months he visited practically all of the European

botanical gardens and was interested to note the differences between the old and new world botanical gardens.

Mr. Raymond H. Torrey told about some interesting findings of rare plants in the Kittatinny Mountains and other nearby ranges.

Dr. Alfred L. Gundersen spoke of his pleasant summer in the Catskills and of the vivid autumnal coloration as noted this year.

Mr. George T. Hastings showed some very interesting mounted specimens of plants collected at Tully, New York, such as *Isoetes* and the very interesting *Eleocharis Robbinsii*.

Dr. John S. Karling reported that he had not been into the Central American jungles as is his usual custom during summer vacations, since the consumption of chicle has decreased perceptibly. Instead he spent the time on his father's estate in Western Texas digging wells which are water holes for cattle, and reported noticing in some of these wells unusual quantities of *Euglena*.

Dr. Elmer D. Merrill stated that he had an interesting case in the herbarium two days before. For many years he has been interested in the distribution of weeds particularly in the Orient where very many are of American origin. Most of these reached the Orient in the early colonial period as accidental introductions. Among collections received within the past three or four years from various parts of the Old World, he found specimens of *Borrea laevis*, a widely distributed American weed, from such remote areas as Sumatra, Singapore, Joer in the Southern Philippines, New Britain, Sepik River, New Guinea and Samoa. No record of this plant occurs in any literature pertaining to the flora of the Old World. The weed is apparently a very recent introduction from tropical America. At the same time he reported *Borrea latifolia*, another American weed from Eastern Sumatra and from Singapore, also a new record from the old world tropics.

Dr. Sam F. Trelease and Dr. Ralph H. Cheney also gave interesting reports.

Respectfully submitted,

FORMAN T. MCLEAN

*Secretary*

## MEETING OF OCTOBER 19, 1932

The meeting was called to order at The New York Botanical Garden at 3:30 P.M. by President Sinnott. There were 32 members present.

Mr. George Hume Smith, 1925 Central Avenue, Indianapolis, Indiana was unanimously elected to membership in the club.

President Sinnott stated that the next meeting of the Club would be held at Schermerhorn Hall, Columbia University, on Wednesday evening November 2, instead of November 1, as Professor Öwind Winge of the University of Copenhagen would speak on "Sex determination in *Malandrium* and *Lebistes*."

Last year at the suggestion of several members of the club, the President appointed a committee consisting of Dr. Britton as Chairman, Dr. Howe and Dr. Harper. Dr. Howe presented a proposed amendment to the constitution regarding the appointment of a council to take the place of the executive committee.

Several suggestions as to changes to the proposed amendment were made and the matter referred back to the committee.

Mr. Harold N. Moldenke of The New York Botanical Garden gave a very interesting talk on "The Genus *Callicarpa*."

Mr. Henry Teuscher gave an interesting talk on "Some Suggestions of a Horticulturist on the Problem 'What Is a Species?'"

Against personal inclination I have had to dive pretty deeply into taxonomy. During the last 10 years I have been called upon twice to establish large arboreta, and in such undertakings one can never get very far, before one runs into a maze of taxonomic problems in which one has to take a stand. To assemble some 6000 species and varieties of trees and shrubs, and to arrange them intelligently, one must decide upon the system which is to be followed. The same species will frequently be received from different sources under 3 or 4 different names, and from these the valid name which is to be used in the future has to be selected. The eternal question: "what is a species?" pops up on every side and has to be solved somehow. The taxonomist gets out of this rather easily. He simply makes up his mind that the plant before him is a new species; he describes it, and gives it a name, and is done with it. The horticulturist who tries to grow this species is practically married to it; and all too frequently, he finds out that his spouse has more than one alias. Certain characteristics, as for instance pubescence, which may be distinct enough on wild growing plants or collected herbarium specimens, frequently become indistinct under cultivation. Extreme forms, so distinct from others that they were considered to be species, will, if raised from seeds, occasionally produce a range of varieties which link them with existing species; or they will even

revert altogether to the type of another species. In an extreme case, it has even been reported that from one and the same seedpod were raised under cultivation several forms which from wild collected specimens had been described as separate species. Such regrettable mistakes can be avoided only if the study of plants under cultivation is given more serious consideration by the taxonomist. On the other hand, differences appear under cultivation which can not be observed under natural conditions, and for which, though they are of the greatest importance to the horticulturist, the taxonomist does not even offer a term, for instance, variation in hardiness. This variation as shown by the famous hardy race of the Lebanon Cedar at the Arnold Arboretum, and as I observed, also by *Cornus kousa*, *Cryptomeria japonica*, and various other woody plants, remains constant in the offspring, yet it can not be expressed by a name. The inheritable growth habits of trees is another rock on which botanical nomenclature splits. At the Forestry Experiment Station, Wageningen, Holland, I was very much impressed by a beautiful set of races of *Quercus robur* and *Fagus sylvatica*. One of these races always developed more than one leader which, of course, made it worthless for forestation purposes. Another always grew as straight as a candle, and a third, again, always grew crooked and scrubby. These peculiarities of growth were invariably passed on to the respective offspring as they had been through several generations. Such differences in hardiness and growth habit which can be relied upon to remain constant, are of much greater importance to the horticulturist than many of the characteristics which botanists consider sufficient for the separation of species, yet there are no taxonomic terms by which they can be distinguished.

All these rather well known facts I mention merely to give my point more carrying power. What I wanted to present to you in particular is an observation which I made at the Morton Arboretum, Illinois, and which, I believe, will prove of interest to you. To me it brought home more clearly than anything else, how difficult it is to define the term "species." This observation concerns a very widely cultivated, ornamental shrub, the Choke-berry, *Aronia*.

There are two species of *Aronia* which interest the horticulturist for their ornamental value:

First, *Aronia melanocarpa* with black fruits which ripen in August and drop early. Its glabrous leaves are usually lustrous above and do not develop a conspicuous fall-coloring. This species usually grows in swamps, though occasionally in dry uplands.

Second, *Aronia arbutifolia* with bright red berries which ripen in September. Usually the berries of this species are still green when those of *A. melanocarpa* are falling, and they remain on the bush until late in the winter. The dull green leaves, which are densely grayish pubescent beneath, color brilliant scarlet in the fall. This species usually grows in swamps and lowlands.

So far so good. These two species are very distinct and can not be mistaken for one another. But there is a third species, if it is a species, which causes a great deal of confusion:

*Aronia atropurpurea*. This is in all its characters intermediate between the two others. Its fruits are neither red nor black, but purplish-black. Its leaves and branches are quite densely pubescent when young, but get more or less glabrous when mature. It has all the appearance of a natural hybrid, but,

in the first place, it breeds true from seeds. A hybrid is supposed to "split up", as the breeder says, and produce in its progeny a certain percentage of plants which resemble the grandparents, or at least one of them. The fact that it apparently does not "split up" is no proof, however, that it is not of hybrid origin. For that matter it could be constant through the dominance of certain characters in a certain combination. It could also be that it does split after all, but that the splitting has not been observed, because it has never been raised in quantity under scientific control. However, that may be, there is another "but" which seems to be of a more serious nature. In its native haunts *A. atropurpurea* is hardly ever found near either of its possible parents. I saw it in the White Mountains, New Hampshire, growing on exposed rocky ledges at about 3000 ft. elevation. Neither of the other two species occurred anywhere in the vicinity for several miles. Well, "that settles it," most people will say; "it is a true species." But, that is not all. There does exist a hybrid between the two species, which first was observed in Europe, where it originated in cultivation. It usually is listed there under the name *Aronia floribunda*, and two varieties of it were distinguished. One, which resembles more closely *A. arbutifolia* was named var. *typica*. It is of more vigorous growth than either of its parents and has the densely pubescent leaves and branches of *A. arbutifolia*, but its fruits are purplish-black. Its leaves color very beautifully in the fall.

The other variety of *A. floribunda*, which is intermediate between the parents, was named var. *glabrescens*, because its leaves become glabrous when mature like those of *A. melanocarpa*. This latter variety is, as far as I can see, indistinguishable from the native American *A. atropurpurea*. If the two are planted together, it is impossible to say which is which.

European botanists did not hesitate to identify *A. atropurpurea* with the hybrid *A. floribunda*. When speaking of *A. floribunda* they will simply state: this hybrid has also been found wild, growing naturally within the range of the two species. Now, it is true, of course, that *A. atropurpurea* grows within the range of the other two, but, that it does not grow between them European botanists have not observed.

American botanists, on the other hand, refuse to this day to accept hybrid origin for *A. atropurpurea*. They either do not mention the hybrid at all, or they will say something like this: There may exist hybrid forms which can not be distinguished from *A. atropurpurea*, but *A. atropurpurea* is a species. Now, where is the truth?

It seems as if the hybrid has never been recognized in American nurseries, but it occurs, and, perhaps, just as frequently as in European nurseries. The Morton Arboretum had proof of that. Some 10 years ago we bought from an Eastern nursery 100 plants of *Aronia melanocarpa*. That is, we bought the plants under that name. What we got, was an excellent line of the two forms of the hybrid. The plants were supposed to have been raised from seeds of *A. melanocarpa*. This claim we could not check, but whatever their origin, the fact remained that there were the two very distinct varieties of the hybrid, agreeing perfectly in every character with the descriptions given in European literature. The var. *glabrescens* was entirely identical with *A. atropurpurea* of which we had some wild collected plants. The two not only looked alike in

general appearance, and in leaf and branch characters, but they ripened their fruits at the same time—that is, just between the two other species; their fruits were of the same size, shape and color; they colored their leaves in the same way in the fall, and dropped them at the same time.

These observations, as I have pointed out, were not based on experiment, since we did not produce the hybrid ourselves, but it seems to be beyond doubt that it is possible to produce experimentally a plant which looks exactly like *A. atropurpurea* by cross-fertilizing the two other species. If that were done, would that be a proof that *A. atropurpurea* is of hybrid origin? Not necessarily, I believe. And, at this point I wish to emphasize the fact that the other form of the hybrid, the var. *typica*, has never been found wild as yet, as far as I am aware. And, why could not by some joke of nature an intermediate form originate as a mutant from one species which resembles a hybrid but is not? Should it be possible to prove mutant origin for *A. atropurpurea*, perhaps by cytogenetic tests, what would the taxonomist do? Should he keep two plants separate under two different names which in outward appearance are exactly alike, or should he combine under one name two plants which in origin are fundamentally different?

This suggestion may sound like hair-splitting, but I do not believe that it is. If we do believe in evolution, we have to believe that many plant-forms, which we now call species, have originated not as mutants, as they are usually explained, but by cross-fertilization. As long as they remain constant, the taxonomist may say that it does not matter how they originated; but what about the numberless garden-hybrids which plant-breeders have originated, which also come true from seed and remains constant in their characters? No taxonomist suggests calling them "species," for the simple reason that their hybrid origin is known. Even a binomial name which is such a great practical help to the horticulturist is usually denied to them.

And this leads me back to where I started. I have no solution to suggest for the problem of what is a species, but I believe that a close cooperation between the horticulturist and the taxonomist might help to find a solution for some of the puzzles which I have presented.

Respectfully submitted,

FORMAN T. MCLEAN  
Secretary

#### MEETING OF NOVEMBER 2, 1932

The meeting was called to order at Schermerhorn Hall, Columbia University, at 8:15 p.m. by President Sinnott. There were 200 people present.

Professor Öwind Winge of the University of Copenhagen discussed "Sex Determination in *Melandrium* and *Lebistes*." He illustrated the inheritance of a number of color characters and other peculiarities by colored lantern slides.

The interest of the botanists was fully as much aroused by the fish as by the plants.

Meeting adjourned at 9:45 P.M.

Respectfully submitted,  
 FORMAN T. MCLEAN  
*Secretary*

#### MEETING OF NOVEMBER 18, 1932

The meeting was called to order at the Brooklyn Botanic Garden in conjunction with the New York Biology Teachers, at 8:15 P.M. by President Sinnott. There were 150 people present.

Dr. C. Stuart Gager of the Brooklyn Botanic Garden spoke on "The Foundational Literature of Botany." He showed a large collection of ancient books on botany, emphasizing particularly the development of the science of plant physiology. The oldest book was by Apulius Barbatus, published in 1483. Dr. Gager then called upon Dr. Alfred Gunderson who devoted about six minutes to brief comment on the ancient literature of systematic Botany beginning with Theophrastus about 300 B.C.

Professor Wheat and Dr. Gramet of the Biology Teachers Association showed an educational film illustrating photosynthesis, with suitable reading inserts which can be used without any supplementary lecture in instructing biology classes.

At about 9:30 the meeting adjourned and those present proceeded to an inspection of the exhibits, principally from the high schools, showing biology activities and new developments in teaching. Among these the clay models from the Theodore Roosevelt High School were particularly instructive.

Respectfully submitted,  
 FORMAN T. MCLEAN  
*Secretary*

#### MEETING OF DECEMBER 6, 1932

The meeting was called to order at the American Museum of Natural History at 8:15 P.M. by President Sinnott. There were 46 members present.

A letter telling of the death of Mr. Benjamin Rush Abbott was read to the club.



The resignations of Mr. F. L. Pickett and Mrs. Charles Gormley Stehle were accepted with regret.

Dr. R. R. Stewart, Professor of Biology of Gordon College, Rawalpindi, India gave an interesting talk on "Plant Collecting in Kashmir and Western Tibet."

Dr. Howe read a proposed amendment to the constitution and by-laws of the Club.

Action on this will be taken at the Annual Meeting.

Meeting adjourned at 9:45 for refreshments.

Respectfully submitted,

FORMAN T. MCLEAN

*Secretary*

## NEWS NOTES

### LEADERS INVITED FOR 1933 FIELD SCHEDULE

The Chairman of the Field Committee would be glad to hear from members of the Club who have not led field trips during the past few years, or new members who have not led any trips yet, as to excursions which they might organize and conduct for the Club in the 1933 Schedule. The Chairman believes that there may be members, whom he has not particularly invited to lead trips, and who may be well qualified, by acquaintance with interesting botanical localities, to enrich the field schedule. He will be glad to hear from any who will lead field trips, with suggestions as to place, objective, transportation, and choice of dates suitable to them. The field schedules have been enlarged in recent years through the increasing cooperation of members, for the benefit of all, and there are probably others the chairman does not happen to know, who might contribute to the value of our excursions.

RAYMOND H. TORREY,  
Chairman, Field Committee,  
99-28 193rd Street, Hollis, L.I., N.Y.  
Telephone Hollis 5-5139.

AT THE MEETING of the Botanical Society of America in Atlantic City in December the following officers were elected: President, E. J. Kraus of the University of Chicago; Vice-president, G. E. Nichols, of Yale University; Secretary, L. C. Petry of Fayette, Mo.; Treasurer, H. A. Gleason of the New York Botanical Garden; Editor of the American Journal of Botany, Sam F. Trelease of Columbia University.

THE HERBARIUM of the Field Museum of Natural History has been presented by the University of Chicago with more than 51,000 botanical specimens, assembled by the late John M. Coulter, for many years head of the botanical department of the university. It includes hundreds of type specimens of new plants, historic collections made by early botanists who explored the western and southwestern regions of the United States and thousands of rare plants from widely scattered parts of the eastern hemisphere. With this addition, the herbarium of the museum now consists of more than 656,000 specimens from